FIVE YEAR REVIEW

PICILLO FARM SUPERFUND SITE
COVENTRY, RHODE ISLAND

MAY 1998

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION I - NEW ENGLAND

FIVE YEAR REVIEW (TYPE IA)
PICILLO FARM SUPERFUND SITE
MAY 1998

I. Introduction

Authority Statement. Purpose. EPA Region 1 conducted this review pursuant to Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 121(c), National Oil and Hazardous Substances Pollution Contingency Plan (NCP) section 300.400(f)(4)(ii), and OSWER Directives 9355.7-02, "Structure and Components of Five Year Reviews" (May 23, 1991) and 9355.7-02A, "Supplemental Five Year Review Guidance" (July 23, 1994). This is a statutory review. The purpose of a five year review is to ensure that a remedial action remains protective of public health and the environment and is functioning as designed. This document will become a part of the Site file. This review (Type Ia) is applicable to a site at which response is ongoing.

Site Characterization. The Picillo Farm Site is located on Piggy Hill Lane in Coventry, Rhode Island, near intersection of State Highway 102 and Perry Hill Road. The Site includes the 7.5-acre disposal area, which is currently fenced, and approximately 35 acres of surrounding woodland and wetland areas. The Site is located in a rural area and is surrounded by mixed woods and wetlands. Residential properties are located north, northeast and east of the Picillo Farm property, along Perry Hill Road, West Log Bridge Road and Piggy Lane, with the closest two residences located on the Picillo Farm property, approximately 1,300 feet north from the disposal area boundary. All nearby residences are served by private wells. To the west, southwest and south the Site is surrounded by a mix of wetlands and wooded areas. The Picillo Farm lies one mile west of the Quidnick Reservoir, which is used for recreational purposes. Unnamed Swamp, adjacent to the farm property drains into Whitford Pond and Great Cedar Swamp, approximately a mile southwest of the farm. The wetlands and surface water bodies adjacent to the Site are considered Class A according to the Rhode Island Water Quality Standards.

The Picillo Farm property had been used as a pig farm when drums containing hazardous wastes and bulk wastes were illegally disposed into several trenches within a 7.5-acre area of the farm over a period of months in 1977. Wastes disposed of at the Site included industrial solvents, oils, pesticides, PCBs, paint sludges, resins, still bottoms, resins and other hazardous materials. These dumping activities also contaminated ground water and surface water in the vicinity of the Site. In September 1977 a sodium aluminum hydride explosion and fire at the site brought the dumping activities to the attention of regulatory agencies.

Since September 1977, a number of investigations and remedial activities have been conducted at the Site. The State of Rhode Island and EPA shared responsibilities in joint cleanup activities and supervision. Between 1980 and 1982 the trenches located along the perimeter of a cleared field -- the northeast trench, northwest trench, west trench, south trench, and two slit trenches -- were excavated, approximately 10,000 drums and significant quantity of contaminated soil were

removed and disposed off site. Approximately 6,500 cubic yards of contaminated soil from this excavation was placed in three stockpiles on the site and was designated as PCB pile and first and second phenol piles.

II. Discussion of Remedial Objectives; Areas of Noncompliance.

A. 1987 ROD. On September 30, 1985, after conducting a Remedial Investigation/ Feasibility Study (RI/FS), EPA issued a Record of Decision (ROD) which called for disposal of contaminated soil in an on-site RCRA landfill. The State of Rhode Island contested the ROD, and in 1987, following the enactment of the Superfund Amendments and Reauthorization Act (SARA), EPA issued an amended ROD. The amended March 3, 1987 ROD required the following remedy:

> Disposal of approximately 3,500 cubic yards of primarily PCB contaminated soils and disposal of approximately 3,000 cubic yards of primarily phenol contaminated soils offsite in a RCRA/TSCA landfill and implementation of site closure activities; and
>
> Operation and maintenance activities, including periodic inspections of the site, mowing the site if necessary, maintenance of any run-on/run-off control systems, and maintenance and periodic replacement of the site fence.

The 1987 ROD also stated that the recommended remedy will not eliminate the residual ground water contamination at the Site. The ROD required EPA to conduct a remedial investigation/ feasibility study to determine the nature and extent of the contamination and to evaluate cleanup alternatives.

In 1988, under an agreement with EPA, four of the Potentially Responsible Parties (PRPs) performed the off-site removal of the contaminated soil and site closure activities: filling, grading and revegetating the site, constructing of surface water runoff control system, and installing a fence around the 7.5 acre disposal area.

A final report, certifying the project completion was prepared by the Settling Parties in January 1989. EPA granted conditional approval of the construction in the January 4. 1989 letter, which followed the November 28, 1988 site inspection. The conditional approval required reseeding of the site in early spring of 1989 in order to establish good vegetative cover over the entire area. In addition, the letter required the Parties to establish a crushed stone drainage channel in place of a large erosion gully in the northern part of the site. For one year from the date of this letter the Settling Parties were responsible for the O&M activities.

On May 1, 1989 the Settling Parties performed an inspection of the perimeter fence and made minor repairs as noted in the May 2, 1989 inspection report. The inspection revealed no O&M

issues other than these previously identified by EPA. The first post closure joint site inspection by the EPA, RIDEM and the PRPs was held on May 2, 1989, at which details of the activities described in the conditional approval were discussed and agreed on. New seed mixture, including northeastern wildflower mixture, was proposed in place of Rhode Island DOT mix initially used, since the mix did not seem to grow well in the western area. A rip-rap channel was agreed to be constructed in place of the northern drainage gully to function as the main drainage channel for the site (May 5, 1989 Site Inspection Report, Ebasco).

From May 22 to 25, 1989, the remaining O&M issues were rectified. The Settling Parties regraded the eroded drainage gully in the northern portion of the site; placed the geotextile and rip-rap to stabilize drainage channel; and seeded the site with alternate seed mix (PRPs monthly progress report, May 1989).

Another post-closure site inspection was held on December 19, 1989 by EPA, RIDEM and PRPs to review the operation and maintenance work performed since January 4, 1989 by the Settling Parties. Following this inspection EPA certified in the February 7, 1990 letter that the remedial action work under the 1988 Consent Decree had been completed. A joint site visit by EPA and RIDEM personnel was conducted on April 27, 1993 for the purposes of the first Five Year Review. No significant deficiencies requiring immediate maintenance or correction were revealed by the inspection. The first Five-Year Review report was issued in May of 1993.

B. 1993 ROD. In 1988, EPA initiated the ground water RI/FS; sampling and other field activities started in Spring of 1990 and continued through Winter of 1992. From January 1989, Operation & Maintenance activities have continued as part of the ground water remedial investigation and design. Upon completion of the Remedial Investigation and Feasibility Study, EPA issued a Record Of Decision on September 27, 1993: The selected remedy included both source control and management of migration components. The major aspects of the remedy included

In-situ thermally-enhanced soil vapor extraction with dewatering and treatment of soils contaminated with volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs);

Excavation and off-site disposal of surface soil contaminated with PCBs;

Extraction and treatment of groundwater and natural attenuation at the fringes of the plume;

Access restrictions and Institutional Controls; and

Long-term operation and monitoring.

A cleanup level of 1.3 ppm for PCB-contaminated surficial soils in a vicinity of former PCB pile were developed to reduce risks associated with the exposure of environmental receptors. The aquifer under the Site is a Class IIB type aquifer which is a potential source of drinking water. Therefore, MCLs and non-zero MCLGs are Applicable and Relevant and Appropriate Requirements (ARARs). Cleanup levels in subsurface soils in a vicinity of former disposal trenches were established to protect the aquifer from potential source leachate. For discussion on ARARs see September 27, 1993 Record of Decision, The groundwater cleanup levels have to be met throughout the plume zone. EPA estimated that groundwater cleanup levels will be obtained within approximately 20 years, with soil cleanup levels to be achieved within an estimated three years. The ROD also acknowledged that the ability to meet this time frame would be dependent on the effectiveness of the source control remedy, the ability to contain the contamination, and whether DNAPL exist, and to what extent it exist, in the bedrock.

Under a Consent Decree entered by the Court on October 9, 1997, five Performing PRPs are implementing the remedy selected in the 1993 ROD. Extensive pre-design field investigations and SVE pilot test conducted in 1996 and 1997 confirmed appropriateness of the SVE and groundwater extraction and treatment as selected remedy for the Site. No significant changes in extent of the groundwater plume were observed with exception of the southwestern plume zone, where on-going groundwater monitoring may indicate reduction in the groundwater area requiring long-term containment. On-going testing of the residential wells in a vicinity of the site have not shown any levels of contaminants above MCLs.

No free-phase DNAPL was found at the site, and residual NAPL "smear zone" was confirmed to generally extent less than 10 feet below the water table. No DNAPL contamination was found in bedrock and relatively low groundwater contaminant levels were found in deeper bedrock, indicating that contaminant plume is limited to 10 to 40 feet below the bedrock surface. No significant soil contamination was found in the south and slit trenches, where no SVE is currently being planned; significant lateral migration from the northwest and northeast trenches was found however, necessitating extension of SVE in these areas.

The design anticipates implementation of conventional SVE first; it does not, however precludes implementation of thermal enhancements in strategic areas should the SVE operational data indicate that such enhancements are warranted. The Region is also collaborating with EPA's Office of Research and Development (NRMRL, Ada, OK) to develop a prototype national model for SVE closure criteria based on a method to determine whether soil contaminant concentrations are not contributing to increased VOC concentrations in the underlying groundwater. The goal of such model would be to determine site-specific cost-effective extent of implementation of soil vapor extraction relative to other factors present, such as extent of DNAPL contamination in fractured bedrock.

The 100 Percent Design is expected to be completed by the PRPs in a summer of 1998 and construction is planned to start in December of 1998. EPA plans to remove the PCB-

contaminated surface soils in a summer of 1998 under an Interagency Agreement with the Army Corps of Engineers (this will be done under a mixed-work agreement part of the Consent Decree). Collection of monitoring data at the site and testing of residential wells in a vicinity of the site is on-going.

III. Recommendations.

The removal of contaminated soil and site closure were performed during the Summer of 1988 according to the requirements of the ROD (March 3, 1987). Documentation of the design and construction process support this conclusion.

Under the 1988 Consent Decree the Potentially Responsible Parties performed site closure and the operation and maintenance of the site for the first year following the completion of construction. EPA and the RIDEM has conducted joint periodic inspections of the Site and O&M activities as part of the ground water remedial investigation. The RI/FS specified in the 1987 ROD has been performed and a ROD for final site remedial action was issued on September 27, 1993. RI/FS and Design documents adequately document conditions at the site and the O&M activities for the purposes of this five-year review.

The following recommendations are based on this Five Year Review:

- Implementation of the remedy selected in 1993 Record of Decision under the Consent Decree with the PRPs and an IAG with the COE should be continued: additional extensive delays in the design and implementation of the remedy should be avoided;

- Collaboration with EPA's Office of Research and Development (NRMRL, Ada, OK) has been crucial in negotiating the Consent Decree and design documents at this site. Continued technical assistance will be extremely helpful in assuring that the PRPs construction and implementation of the remedy is technically sound.

- Monitoring specified in the Consent Decree should continue;

- Institutional Control Plan should be finalized and access restrictions and institutional controls should be implemented as currently planned;

- Periodic site inspections should continue.

- Drainage structures, grading and vegetation cover remaining from the 1987 ROD implementation were altered during the SVE pilot test in a summer of 1997 and will be significantly modified and as part of implementation of the final remedy. These features should be reviewed and approved as part of the 100 Percent Design.

IV. Statement of Protectiveness.

I certify that remedies selected for this site remains protective of human health and the environment. The remedy selected in 1993 ROD, which is currently in the design phase, is also protective of human health and the environment.

V. Next Five-Year Review.

The next five-year review will be conducted by May, 2003.

Patricia L. Meaney, Director
Office of Site Remediation and Restoration

5/22/98
Date